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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/594,254

09/25/2006

Marion Jeanne

5284-81PUS

1875

7590

08/31/2009

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EXAMINER

GUARINO, RAHEL

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

08/31/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/594,254		JEANNE ET AL.	
	Examiner		Art Unit	
	RAHEL GUARINO		2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Dill et al
US 7,010,052

Re claim 1, Dill discloses a method of combined source-channel decoding of digital data coding discrete values or symbols (i, j, etc.) received by a channel decoder (26) of a digital data from a source (10) over a transmission channel (fig.1), comprising the steps of:

applying probabilities ($p(i)$, $p(i/j)$) col. 30 lines 9-35 where $p(i/j)$ is the transition of probability) associated with said symbols to a channel decoding trellis of said channel decoder (col. 8 lines 41-55) and statistically estimating said probabilities from occurrences of the symbols estimated by said decoder (col. 34 lines 21-30).

Re claim 2, the combined decoding method according to claim 1, wherein said probabilities are estimated iteratively (col. 34 lines 21-26).

Re claim 3, the combined decoding method according to claim 1, wherein probabilities are probabilities ($p(i)$) of occurrences (transition) of the symbols (col. 31 lines 57-60).

Re claim 4, the combined decoding method according to claim 1, wherein said probabilities are probabilities ($p(i/j)$) of transitions between the symbols (col. 30 lines 9-35 where $p(i/j)$ is the transition of probability).

Re claim 5, the combined decoding method according to claim 1, wherein said channel decoder is a convolutional decoder (col.4 lines 55-61) associated with a convolutional channel coder (fig.3; col. 3 lines 5-10).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dill et al US 7,010,052 in view of Cedergren et al. US 7,466,658

Re claim 6, the combined decoding method according to claim 1, does not teach wherein the decoder is a turbodecoder and said channel decoder is an input channel decoder of said turbodecoder.

However, Cedergren discloses (fig.1) wherein the decoder (6) is a turbodecoder and said channel decoder is an input channel decoder of said turbodecoder (col. 4 lines 63-67).

Therefore, taking the combined teaching of Dill and Cedergren as a whole would have been rendered obvious to one skilled in the art to modify Dill to utilize a turbodecoder and said channel decoder is an input channel decoder of said turbodecoder for the benefit of achieving a decoded data symbol.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dill et al US 7,010,052 in view of Sayood et al. US 6,892,343

Re claim 7, the combined decoding method according to claim 1 does not teach wherein said symbols are coded by variable length codes (VLC) represented by a binary tree of finite size and said probabilities ($p(i)$, $p(i/j)$) are associated with each branch of said tree and applied to the corresponding stages of said channel decoding trellis.

However, Sayood discloses (fig.3) said symbols are coded by variable length codes (VLC) represented (col. 1 lines 21-26) by a binary tree of finite size and said probabilities ($p(i)$, $p(i/j)$) are associated with each branch of said tree and applied to the corresponding stages of said channel decoding trellis (col. 12 lines 26-36).

Therefore, taking the combined teaching of Dill and Sayood as a whole would have been rendered obvious to one skilled in the art to modify Dill utilize said symbols are coded by variable length codes (VLC) represented by a binary tree of finite size and said probabilities ($p(i)$, $p(i/j)$) are associated with each branch of said tree and applied to the corresponding stages of said channel decoding trellis for the benefit of reserving the probability space for a symbol.

6. Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dill et al US 7,010,052 in view of Waldman et al. US 4,942,467

Re claim 8, Dill discloses a combined source-channel decoding of digital data comprising (fig.1);

a channel decoder (26) adapted to receive digital data from a source (10) over a transmission channel and coding discrete values or symbols (i , j , etc.) and probabilities $p(i/j)$ col. 30 lines 9-35 where $p(i/j)$ is the transition of probability) associated with said symbols (col. 8 lines 41-55);

means for applying said probabilities to a channel decoding trellis (26) of said channel decoder (col. 34 lines 21-30); does not teach a generator of histograms of occurrences of the symbols estimated by the decoder; means for calculating probabilities ($p(i)$, $p(i/j)$) associated with said restored symbols.

However, Waldman a generator of histograms of occurrences of the symbols estimated by the decoder (col. 1 lines 44-50); means for calculating probabilities ($p(i)$, $p(i/j)$) associated with said restored symbols (col. 4 lines 60-64).

Therefore, taking the combined teaching of Dill and Waldman as a whole would have been rendered obvious to one skilled in the art to modify Dill to generate of histograms of occurrences of the symbols estimated by the decoder and calculate probabilities ($p(i)$, $p(i/j)$) associated with said restored symbols for the benefit of optimizing the transmitted signal according to its corresponding conditional histogram (col.11 lines 20-25, Waldman).

Re claim 9, the modified invention as claimed in claim 8, (fig.3) wherein said channel decoding trellis produces binary values ((0, 1) or (-1, 1) considering modulation) and said means for applying said probabilities comprise a module for converting symbol probabilities ($p(i)$, $p(i/j)$) into probabilities of binary values ((0, 1) or (-1, 1)) (col. 30 lines 40-60; Dill).

Re claim 10, the modified invention as claimed in claim 8, wherein probabilities are probabilities ($p(i)$) of occurrences (transition) of the symbols (col. 31 lines 57-60; Dill).

Re claim 11, the modified invention as claimed in claim 8, wherein said probabilities are probabilities ($p(i/j)$) of transitions between the symbols (col. 30 lines 9-35 where $p(i/j)$ is the transition of probability Dill).

Re claim 12, the modified invention as claimed in claim 8, wherein said channel decoder is a convolutional decoder (col. 4 lines 55-61) associated with a convolutional channel coder (fig. 3; col. 3 lines 5-10 Dill).

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dill et al US 7,010,052 in view of Waldman et al. US 4,942,467 in further view of Cedergren et al. US 7,466,658

Re claim 13, the modified invention as claimed in claim 8, does not teach wherein the decoder is a turbodecoder and said channel decoder is an input channel decoder of said turbodecoder.

However, Cedergren discloses (fig. 1) wherein the decoder (6) is a turbodecoder and said channel decoder is an input channel decoder of said turbodecoder (col. 4 lines 63-67).

Therefore, taking the combined teaching of Dill, Waldman and Cedergren as a whole would have been rendered obvious to one skilled in the art to modify Dill and

Waldman to utilize a turbodecoder and said channel decoder is an input channel decoder of said turbodecoder for the benefit of achieving a decoded data symbol.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dill et al US 7,010,052 in view of Waldman et al. US 4,942,467 in further view Sayood et al. US 6,892,343

Re claim 14, the modified invention as claimed in claim 8 does not teach wherein said symbols are coded by variable length codes (VLC) represented by a binary tree of finite size and said probabilities ($p(i)$, $p(i/j)$) are associated with each branch of said tree and applied to the corresponding stages of said channel decoding trellis.

However, Sayood discloses (fig.3) said symbols are coded by variable length codes (VLC) represented (col. 1 lines 21-26) by a binary tree of finite size and said probabilities ($p(i)$, $p(i/j)$) are associated with each branch of said tree and applied to the corresponding stages of said channel decoding trellis (col. 12 lines 26-36).

Therefore, taking the combined teaching of Dill, Waldman and Sayood as a whole would have been rendered obvious to one skilled in the art to modify Dill and Waldman utilize said symbols are coded by variable length codes (VLC) represented by a binary tree of finite size and said probabilities ($p(i)$, $p(i/j)$) are associated with each branch of said tree and applied to the corresponding stages of said channel decoding trellis for the benefit of reserving the probability space for a symbol.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RAHEL GUARINO whose telephone number is (571)270-1198. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rahel Guarino/
Examiner, Art Unit 2611
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611

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